AECOM

Standard Operating Procedure
Lower Passaic River Restoration Project

Sample Packaging and Shipping

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Annual review of this SOP has been performed
and the SOP still reflects current practice.

Initials: _____ Date: _____
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Contents

1.0 Scope and Applicability

1.1 The purpose of this document is to define the standard operating procedure (SOP) for packaging and shipping samples collected in the Lower Passaic River Study Area and the Newark Bay Study Area as part of the Lower Passaic River Restoration Project (LPPRP). Sample packaging and shipment generally involves the placement of individual sample containers into a cooler or other similar shipping container and placement of packing materials and coolant in such a manner as to isolate the samples, maintain the required temperature, and to limit the potential for damage to sample containers when the cooler is transported.

1.2 It is expected that the procedures outlined in this SOP will be followed. Procedural modifications may be warranted depending on field conditions, equipment limitations, or limitations imposed by the procedure. Substantive modification to this SOP will be approved in advance by Task Manager and the Project Quality Assurance (QA) Manager and will be communicated to the Cooperating Parties Group (CPG) Project Coordinator and the United States Environmental Protection Agency (USEPA) Remedial Project Manager. Deviations from the SOP will be documented in the field records. The ultimate procedure employed will be documented in the report summarizing the results of the sampling event or field activity.

2.0 Health and Safety Considerations

2.1 Although packaging activities do not generally pose significant health and safety risks, sample exposure via external container residues may occur and much of the work going on in the vicinity of sample custodians/shippers require attention to safety practices. Project related physical, chemical, and biological hazards are addressed in the site specific Health and Safety Plan (HASP) and associated addendums (MPI 2005a; MPI 2005b; AECOM 2011).

2.2 Sample packaging and shipping involves potential physical hazards primarily associated with handling of occasional broken sample containers and lifting of heavy objects. Adequate precautions will be taken, including minimizing the weight of individual coolers, using hand carts to transport coolers, and using the buddy system to lift coolers into and out of vehicles.

2.3 Daily safety briefs will be conducted at the start of each working day before any work commences. These daily briefs will be facilitated by the Site Safety Officer (SSO) or his/her designee to discuss the day's events and any potential health risk areas covering every aspect of the work to be completed. As detailed in the HASP, everyone on the field team has the authority to stop work if an unsafe condition is perceived until the conditions are fully remedied to the satisfaction of the SSO.

3.0 Interferences

Improper sample storage or inadequate protection against breakage and cross-contamination could potentially affect sample results. The field team will follow the details of this SOP to minimize these effects.

4.0 Equipment and Materials

The following equipment list contains materials which may be needed in carrying out the procedures contained in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- personal protective equipment (PPE) and other safety equipment, as required by the HASP;
- inert packing material (e.g., foam peanuts, vermiculite, cardboard, bubblewrap, etc.);
- pre-preserved sample containers as specified in the QAPP (Worksheet #19);
- sample labels;
- chain of custody (COC) forms;
- insulated coolers;
- custody tape or seals;
- indelible marking pens;
- shipping tape;
- sealable plastic bags;
- temperature blanks (provided by the laboratory);
- field logbook;
- ice or similar chilling source;
- ballpoint pen or fine-tipped marked (e.g., Sharpie®); and
- clear plastic sealing tape.

5.0 Procedures

5.1 General requirements

5.1.1 Vehicular sample transport will adhere to normal/applicable Department of Transportation (DOT) regulations and air transport should follow applicable International Air Transport Association (IATA) regulations. DOT and IATA regulations/guidelines related to sample shipments can be viewed on AECOM's SH&E intranet web page.

5.1.2 An area for storing unused sample containers/coolers and a clean area for sample handling, packaging, and shipment will be designated at the CPG field facility to avoid cross contamination concerns.

5.1.3 Laboratories will often re-use coolers. The interior and exterior of each cooler received at a project location should be inspected for cleanliness before using it. Any coolers that have cracked interior or exterior linings/panels or hinges should be discarded. Any coolers missing one or both handles should also be discarded if replacement handles (i.e., knotted rope handles) cannot be fashioned in the field.

5.1.4 Excess strapping tape and old shipping labels should be removed. If the cooler interior exhibits visible contamination or odors it should be decontaminated in accordance with LPR-G-03 – Equipment Decontamination (Level II) prior to use.

5.1.5 The Field Task Manager or designee will notify the laboratory(ies) of the number, type and approximate collection and shipment dates for the samples in advance of any sample transfers and communicate any delays in sample shipment. The laboratory will be alerted when shipments are scheduled for weekend delivery, so that personnel are available to receive the samples.

5.2 Sample packaging and shipping will be done in accordance with applicable regulations, as described below:

5.2.1 After filling a sample container, affix cap. For sediment/solids containers, secure the cap with clear tape **(except for samples to be analyzed for volatile organic compounds [VOCs]** which are pre-tared bottles); the use of plastic tape to secure the cap is not required for aqueous containers. Complete the sample label. Apply the label to the sample container and cover with clear tape.

5.2.2 Clean the outside of each sample container by wiping it off with a clean paper towel. Verify that residual sediment has been removed from the outside of the container, and from the area under and around the cap.

5.2.3 Place each glass sample bottle into an individual bubble bag sleeve provided by the lab or wrap each glass bottle/jar individually using bubble wrap secured with tape or rubber bands

5.2.4 Seal each sample container inside a sealable plastic bag. Samples for VOC analysis will be packaged together in a sealed plastic bag.

5.2.5 For those samples that require thermal preservation, place on ice or similar chilling source immediately after collection.

5.2.6 Place plastic bubble wrap matting in the bottom of each cooler or shipping container as needed. Insert a clean trash bag into the cooler to serve as a liner.

5.2.7 Transfer the samples to the plastic-lined cooler. Place bottles upright into the cooler. If a combination of plastic and glass sample containers are to be packed, alternate them within the cooler to further protect the glass. Use inert packaging material (e.g., cardboard, vermiculite, etc.) to cushion the samples and minimize the potential for breakage by placing additional packing material throughout the voids between sample containers and between any layers within each cooler to a level which meets the approximate top of the sample containers. Packing material may require tamping by hand to reduce the potential for settling. Seal the drains on the ice chest (if present) with shipping tape or plug the drains with silicone sealant or a similar inert substance.

5.2.8 Place a trip blank in each cooler containing field samples for VOCs and/or TPH Purgeables analyses. It is suggested that sample containers used for VOC or TPH Purgeables analyses should be grouped together into a single individual cooler to limit the number of trip blanks required for transportation and analysis. Note that trip blanks are not required for aqueous QC samples such as equipment rinsate blanks.

5.2.9 Conduct an inventory of sample numbers, fractions and containers when placing samples into the coolers, and check the inventory against the corresponding COC form before sealing the cooler.

5.2.10 For those samples requiring thermal preservation, ice or similar chilling sources sufficient to maintain a temperature of 4° ± 2° Celsius (°C) will be placed inside the cooler during transport. Double bag cubed ice in heavy duty Ziploc type plastic bags to prevent leakage, close the bags, and distribute the packages in a layer over the top of the samples. If sample bottles are bubble wrapped, it is also permissible to insert double bagged ice packages between the sample bottles. Never place un-bagged loose ice directly into a cooler. Use sufficient ice to accommodate reasonable delays in shipment. A temperature blank provided by the analytical laboratory with each cooler will be included in the shipment.

5.2.11 Obtain two custody seals and enter the seal numbers on the COC form. Complete sample tracking documentation as described in SOP LPR-G-05 (Sample Custody), and place the documents in a sealable plastic bag inside the ice chest, taped to the inside of the lid.

5.2.12 Close the trash bag liner to prevent materials from spilling out. Secure chest lid with shipping tape by covering the entire seal with tape. Sign and date the two custody seals, affix the custody seals on opposing corners of the cooler lid and cover the seals with clear plastic tape. An example of a custody seal is attached to SOP LPR-G-05 (Sample Custody).

5.2.13 Shipping containers should be marked "THIS END UP", along with arrow labels which indicate the proper position of the container. Labels used in the shipment of hazardous materials (e.g. Cargo Only Air Craft, Flammable Solids, etc.) are NOT permitted to be on the outside of containers used to transport environmental samples.

5.2.14 Repeat the above steps for each cooler or shipping container. If more than one cooler is being delivered to a laboratory, mark each cooler as "1 of 2", "2 of 2", etc.

5.2.15 Transport the shipping container directly to the laboratory, the laboratory courier, or to the overnight carrier for overnight delivery. Samples will be shipped by close of the same day, whenever possible.

6.0 Quality Assurance/Quality Control

6.1 Completed COCs will be reviewed by the individuals preparing the samples for shipment for completeness, accuracy, and legibility. Specifically, the samples and COC record will be compared to ensure agreement between the sample labels and the COC, and to verify the number of sample containers.

6.2 The laboratory will notify the Project Chemist within 24 hours of receipt in the event that samples are received broken, that there are sample preservation or holding time exceedances, or there are discrepancies between the custody paperwork and the sample containers.

6.3 The procedures and records associated with sample packaging and shipping are subjected to periodic inspection and review by the Field Task Manager to verify adherence to the procedures outlined in this SOP.

7.0 Data and Records Management

7.1 The records associated with the shipment process (COC records, airbills, etc.) will be maintained in

the CPG field facility in an organized and contained manner (e.g., 3-ring binder or file folder) for the duration of the sampling event.

7.2 COC records will be distributed to the appropriate personnel as described in the Lower Passaic River Data Management Plan (DMP; AECOM 2010).

7.3 Deviations to the procedures detailed in the SOP will be recorded in the field logbook at the time of occurrence and summarized on the Daily Activity Log (refer to SOP LRP-G-01 – Field Records). A formal nonconformance report (NCR) will be completed (refer to SOP LRP-G-01 – Field Records) and distributed as specified in the QAPP.

7.4 All records associated with the activities described in this SOP will be ultimately maintained in accordance with the Lower Passaic River Quality Management Plan (AECOM, 2009).

8.0 Personnel qualifications and training

Individuals executing these procedures will have read and be familiar with the requirements of this SOP and the corresponding LPRRP plans (e.g., HASP, QAPP, DMP, FSP). No specialized training is required; however, execution of these activities will initially be supervised by more experienced personnel.

9.0 References

AECOM 2009. Quality Management Plan, Lower Passaic River Restoration Project, CERCLA Docket No. 02-2007-2009. September 2009 or current version.

AECOM 2010. Lower Passaic River Data Management Plan. July 2010 or current version.

AECOM 2011. Lower Passaic River Restoration Project, Remedial Investigation, Health and Safety Plan Addendum. June 2011 or current version.

MPI 2005a. Lower Passaic River Restoration Project Health and Safety Plan. January 2005.

MPI 2005b. Lower Passaic River Restoration Project Health and Safety Plan Final Addendum – Sediment Coring. July 2005.

Tierra 2007. Standard Operating Procedure No. 2 (Revision 2), Containers, preservation, handling, and tracking of samples for analysis. Newark Bay Study Area Phase II RIWP, Appendix F, October, 2007.

10.0 Revision History

Revision	Date	Changes
0	April 2008	NA
1	July 2008	Minor changes to Sections 5.1.5, 5.2.7, and 5.2.12
2	September 2009	Minor changes to Section 5.1.1, 5.2, and 7.3
3	September 2010	Minor revisions throughout the document
4	June 2011	Updates to references
5	July 2011	Include Newark Bay Study Area
6	June 2012	Modify Section 5.2.1 to reflect that the use of plastic tape is not required to seal the caps of aqueous containers